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ABSTRACT

The Certificate in Data Processing (CDP) Examination conducted by the Institute for Certification of Computer Professionals (ICCP) is one of the qualifications for the CDP. The May 1981 administration tested 3,601 candidates at 149 international test sites. Half of the candidates were taking the examination for the first time and were taking all five sections: Data Processing Equipment, Programming and Software, Principles of Management, Quantitative Methods, and Systems Analysis and Design. They earned higher average scores on each of the sections than first-timers taking fewer than five sections and repeaters. First-timers taking fewer than five sections exceeded repeaters on all sections except Data Processing Equipment and Principles of Management. Examination requirements for the CDP were completed successfully by 1,234 (34 percent) of the 3,601 candidates. Fifteen tables which summarize data about testing centers, candidate demographic characteristics, pass/fail statistics, descriptive statistics, difficulty, discrimination, and reliability are included. (Author/PN)

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REPORT OF THE 1981

CERTIFICATE IN DATA PROCESSING EXAMINATION

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Prepared for the

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PROFESSIONAL EXAMINATIONS DIVISION THE PSYCHOLOGICAL CORPORATION NEW YORK

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CONTENTS

	Page
List of Tables	ii
Foreword	iii
Abstract	iv
Test Centers	1
Candidate Characteristics	2
Sections Taken	3
Test Difficulty	4
Demographic Data	5
DANTES Candidates	8
Reliability	9
Validity	9
Item Discrimination	11
Item Statistics	11
Conclusion	12

LIST OF TABLES

		Page
1.	List of Test Centers with Numbers of Candidates Tested and Sections Taken at Each, 1981 CDP Examination	13
2.	Number and Percent of Candidates Taking Each Section of the 1981 CDP Examination in Relation to Demographic Factors	17
3.	Number and Percent of Candidates Taking the CDP Examination and Taking Each Section in 1981	21
4.	Number and Percent of Candidates Taking, Passing, and Failing Each Section and All Sections of the 1981 CDP Examination	22
5.	Basic Statistics for 1981 CDP Examination	23
6.	Number of Items at Each Difficulty Level in 1981 CDP Examination	24
7.	Comparison of Performance of Selected Groups on Section 1, Data Processing Equipment, 1981 CDP Examination	25
8.	Comparison of Performance of Selected Groups on Section 2, Programming and Software, 1981 CDP Examination	26
9.	Comparison of Performance of Selected Groups on Section 3, Principles of Management, 1981 CDP Examination	27
10.	Comparison of Performance of Selected Groups on Section 4, Quantitative Methods, 1981 CDP Examination	28
11.	Comparison of Performance of Selected Groups, on Section 5, Systems Analysis and Design, 1981 CDP Examination	29
12.	Number of DANTES Candidates, by Service Branch, Taking, Passing, and Failing Each Section of the 1981 CDP Examination, With Mean Scores of Total DANTES Group	30
13.	Education and Experience of DANTES Candidates Taking 1981 CDP Examination	31
14.	Reliability Coefficients for 1981 CDP Examination	32
15.	Number of Items at Each Level of Discrimination in 1981 CDP Examination	33

FOREWORD

This report is based on statistical analyses of data derived from the May, 1981, administration of the Certificate in Data Processing (CDP) Examination. The Examination is given under the auspices of the Institute for Certification of Computer Professionals (ICCP) at testing centers throughout the world. Any qualified person may take the Examination as one of the steps to qualify for the award of the "CDP", which identifies those who have achieved the credential "Certificate in Data Processing". Eligibility is also based on experience, character qualifications, and subscription to codes of ethics, conduct, and good practice.

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Report of the 1981 CDP Examination

ABSTRACT

The Certificate in Data Processing (CDP) Examination was administered in May, 1981, at 149 testing centers located throughout the United States, Canada, and abroad. At that time, 3,601 candidates took 12,831 sections, for an average of 3.6 sections per candidate. Half of the candidates were taking the Examination for the first time and were taking all five sections: Data Processing Equipment, Programming and Software, Principles of Management, Quantitative Methods, and Systems Analysis and Design.

First-time candidates taking all five sections earned higher average scores on each of the sections than first-timers taking fewer than five sections and repeaters. First-timers taking fewer than five sections exceeded repeaters on all sections except Data Processing Equipment and Principles of Management. Examination requirements for the CDP were completed successfully by 1,234 (34%) of the 3,601 candidates.

The report contains fifteen tables which summarize data about testing centers, candidate demographic characteristics, pass/fail statistics, descriptive statistics, difficulty, discrimination, reliability, and the performance of DANTES candidates.

The 1981 Examination as a whole was slightly easier than the 1980 Examination. Unlike recent years, when Section 3, Principles of Management, had been most difficult, in 1981, Section 4, Quantitative Methods, was most difficult. As in 1980, Section 5, Systems Analysis and Design, was least difficult.

Test Centers

The 3,601 candidates who took the May, 1981, CDP Examination were tested at 149 test centers. The 1981 Examination Announcement had listed 96 of those; the remaining 53 were special centers established to meet various special requirements: 12 DANTES centers; 10 foreign centers (one of which was also a DANTES center); 12 Sunday centers; and 19 other special centers for candidates living considerable distances from established centers or for corporations having large numbers of candidates who could be tested at their own site. Two additional foreign centers had been arranged, but they were not used.

Once again, there was an increase in the number of candidates tested, and there were 15 more centers in 1981 than there had been in 1980, making for the same number of centers as had been used in 1979. All categories of special centers increased in numbers over 1980: Sunday centers, from 9 to 12; foreign centers, from 7 to 10 (one of which is also included in the count of DANTES centers); DANTES centers, from 11 to 12; other special centers from 11 to 19. There were no special centers arranged for handicapped candidates in 1980 or 1981. There had been 10 Canadian centers in 1980, and 12 in 1979 and in 1978; there were again 12 in 1981.

Each year, Texas has had the largest number of test centers. In 1980 it was 8; in 1981, 11. Other states with large numbers of centers were California, 8; Illinois, New York, and Pennsylvania, 6; Alabama, Michigan, Ohio, and Tennessee, 5. The number of states with four or more centers moved up from 10 to 13 in 1981. Again there were six states with no test centers in 1981: Delaware, Montana, Nebraska, New Hampshire, South Dakota, and Vermont. (Nebraska was new to that list; and North Dakota dropped from the list.)

Table 1 lists the 149 testing centers in decreasing order for the number of candidates tested at the center. The first five columns of figures indicate the numbers of candidates taking each of the five sections, but not taking all five. The next column gives the number taking all five sections. The final column specifies the total number of candidates tested at the center. Those figures provide the basis for deriving the number of sections administered at each center. To illustrate, using Washington, D.C. data from Table 1, the number of sections administered was:

$$[\ 36 + 24 + 59 + 50 + 17 + (72 \times 5)\ ] = 546$$

Using the last line of Table 1, where data are presented for all candidates:

$$[\ 628 + 516 + 1042 + 843 + 302 + (1900 \times 5)\ ] = 12{,}831$$

The largest center, as usual, was Washington, D.C. Also as usual, there were several centers where a single candidate took only one section. The median (middle) center was one at which 10 candidates took 40 sections, smaller than in 1980, when 12.5 candidates took 49.5 sections at the median center. In 1980, there had been only 34 centers at which fewer than five candidates had been tested; in 1981, there were 46. Of those, 8 were regular centers; 10 DANTES; 11 Sunday; 9 foreign; and 9 other special centers. (One of the DANTES centers with fewer than five candidates was also one of the foreign centers with fewer than five.)

Candidate Characteristics

The typical candidate who takes the CDP Examination, in terms of a modal description, has varied little over the years. As the data in Table 2 show, that candidate is between 26 and 35 years old, with a bachelor's degree in data processing, business, or mathematics, holding a staff or middle management level job in a service organization with five or more years of experience. The modal candidate holds a position as either a systems analyst or a business programmer in an insurance, EDP service, government, or consulting/service organization. While the typical candidate belongs to none of the computer professional organizations, if such membership is held, it is most likely to be in DPMA.

Characteristics in which the 1981 candidates differed by more than 2% of the group from those of 1980 may be of interest. More candidates held the bachelor's degree; fewer had majored in mathematics, and more in data processing; fewer worked for service organizations, and more for manufacturing; fewer held positions in EDP services, and more in insurance; fewer reported having 5-10 years experience, and more had fewer than five years in the field; more held positions as business programmers, with no other position title showing a complementary decline. The middle management group, which had shown a marked increase in 1980, declined in 1981. The proportion of candidates from three states shifted by at least 2%: Connecticut and Texas increased by 2%, while New Jersey decreased by 2%. Other fluctuations in Table 2 were 1% or less from 1980 to

1981. British Columbia and Manitoba provided the largest numbers of Canadian residents, with Ontario dropping to a weak third. No candidate indicated Montana, South Dakota, or Vermont as the state of residence; North Dakota, which had no candidates in 1980, had one candidate in 1981.

Sections Taken

From Table 3 it can be seen that 49% of the candidates were first-timers taking all five sections, 4% were first-timers taking fewer than five sections, and 46% were repeaters. Within each section, the proportion of first-timers taking all sections varied from 61% taking Section 3, Principles of Management, to 81% taking Section 5, Systems Analysis. Among the repeaters, 35% of those taking Section 3 were repeating it, and 14% were repeaters on Section 5. These proportions of repeaters reflect the failure rates in previous years.

The number of first-time candidates taking all five sections declined in 1981 from the high of 1,921 reached in 1980 to 1,781, but the total number of candidates increased once again: 1978, 2,835; 1979, 2,948; 1980, 3,403; 1981, 3,601.

Along with the increase in the number of candidates, in 1981 there was also a marked increase in the number who satisfied examination requirements, from 973 in 1979 and 890 in 1980 to 1,234 in 1981. Of that number, 118 must still complete education and/or experience requirements before they will be eligible to receive CDP certificates.

In 1981, the failure rates were highest in Section 1, Data Processing Equipment (48%) and 4, Quantitative Methods (57%). In recent years, Sections 3 and 4 had had the highest failure rates, but in 1981, Section 3, Principles of Management, had next to the lowest failure rate, with Systems Analysis retaining the position with the lowest rate. The failure rates in 1981, compared to those in 1980, were: Section 1, Data Processing Equipment, 1981 - 48%; 1980 - 45%; Section 2, Programming and Software, 1981 - 37%; 1980 - 38%; Section 3, Principles of Management, 1981 - 36%; 1980 - 60%; Section 4, Quantitative Methods, 1981 - 57%; 1980 - 56%; Section 5, Systems Analysis, 1981 - 19%; 1980 - 28%. In 1980, Section 5 had been the only section to show a decline in the proportion of failures; in 1981, three of the five sections showed lower proportions of failing candidates, among them, Section 5. In years past, Section 2 was the easiest section to pass, but in 1980 it dropped to second, and in 1981 to third, place.

While first-time candidates taking all five sections continue to have a higher pass rate on each section than do repeaters or first-timers taking fewer than five sections, it is interesting to note that first-timers taking fewer than five sections have a higher pass rate on Section 2, Programming and Software, and Section 4, Principles of Management, than repeat candidates. Among first-timers taking fewer than five sections, the proportion failing on each section increased only on Section 1, Data Processing Equipment, from 61% to 63%, a marked reversal of the previous pattern in 1980, where the proportion failing had increased in every area from 1979. The most marked improvement was in Section 3, Principles of Management, where the proportion failing declined from 72% to 53%.

Among the repeaters the most marked improvement was also in Section 3, where the proportion failing declined from 74% to 37%. Smaller changes occurred among repeaters in Sections 1, 2, and 4, but Section 5 showed a decline in failures from 44% to 27%.

Test Difficulty

Unlike the pattern of recent years, Section 3, Principles of Management no longer causes candidates the most difficulty; that distinction has passed to Section 4, Quantitative Methods. The pass rate was lowest for the Total group, for first-timers taking all five sections, and for repeaters, and next to lowest for first-timers taking fewer than five sections. Data in Tables 5 and 6 give additional confirmation.

In Table 5, the highest score achieved by any candidate on Section 4 was 58 out of 60 items, lower than any other section. The median score and the mean score were also lower than those of any other sections. The lowest score achieved, however, was not lower than all other sections. In Section 1, one candidate answered only two (2) questions correctly, and on both Sections 4 and 5, candidates answered only four (4) questions correctly.

The item statistics in Table 6 also show that Section 4 was the most difficult of the five sections in 1981, with an average item difficulty of .67. That index shows that the average candidate taking Section 4 answered 67% of the items correctly. By contrast, on Section 5, where the average item difficulty was .79, the average candidate taking Section 5 answered 79% of the items correctly. It can also be seen in Table 6 that Section 4 contained more difficult items and

fewer easy items than other sections; that is, there were more items with difficulty indices near the bottom of the table and fewer with indices at the top.

As noted in 1980, Section 5 appears to have been the easiest for most candidates. In addition to the lowest failure rate, it had the highest mean and median scores in Table 5, the highest average difficulty and the most easy items (.91 to 1.00) in Table 6.

Comparing the examination's difficulty as a whole with that of recent years, the 1981 examination was slightly easier, with an average difficulty of 73% compared with 72% in 1978, 1979, and 1980. Sections 1 and 4 were slightly harder in 1981; Sections 3 and 5 were somewhat easier; and Section 2 was unchanged from 1980. The number of relatively difficult questions, with difficulty indices of 40% and below, was reduced by half in 1981 from 1980.

The lowest score attained by any candidate was lower in 1981 than in 1980 in Sections 1, 4, and 5. The most dramatic decline was in Section 1, where the lowest score had been 16 in 1980 and dropped to two (2) in 1981. The lowest scores in Sections 2 and 3 rose to 14 in both Sections, while the lowest score in Section 5 dropped from 14 to four (4). The highest scores attained were all within two points of the possible maximum, and on three of the five sections, one or more candidates attained perfect scores of 60. The median scores were the same as 1980, or higher, in every instance. The mean scores declined slightly in Sections 1 and 4, rose slightly in Section 2, and rose appreciably in Sections 3 and 5. There was little change in the standard deviations.

Demographic Data

Candidate performance is related to demographic information in Tables 7 through 11, for each of the five sections separately. In those instances where the number of candidates in a selected category is less than 10, the means and standard deviations are not reported since they tend not to permit meaningful comparisons.

In Sections 1, 2, and 5, the highest mean scores (Tables 7, 8, and 11) were achieved by the 190 first-time candidates taking all five sections who were members of ACM. In the other two sections, 3 and 4 (Tables 9 and 10), the highest mean scores were attained by the 400 first-time candidates taking all five sections who had completed master's degrees. In Sections 1 and 4 (Tables 7 and 10) the lowest mean scores were exhibited by first-time candidates taking fewer than five

sections who had completed "some college". In Section 2 (Table 8) the lowest mean score was recorded by repeat candidates who had majored in Data Processing; in Section 3 (Table 9) the lowest mean score was attained by first-time candidates taking fewer than five sections who held positions as data-processing managers; and in Section 5 (Table 11), first-time candidates taking fewer than five sections who held positions as systems analysts achieved the lowest mean score. That last statement is something of a curiosity, since Section 5 is the Systems Analysis section. One might hypothesize that there are individuals in positions with the title of Systems Analyst who lack the broader training and experience of certifiable data processing personnel, who elect to try the examination which they feel they are most likely to be able to pass. Needless to say, there are undoubtedly other hypotheses that might also explain the phenomenon.

As noted in earlier reports, candidates aged 26 to 35 tended to achieve higher mean scores than those younger or older; those with more education exceeded those with less; middle managers exceeded those in staff positions; consultants and ACM members excelled in their groups. If it were not for the annual consistency of these relative positions, it would be essential to caution the reader that the differences in the means of candidates in different categories are sufficiently small as probably not to be of any statistical significance. The fact that the same relative differences are observed each year adds a degree of validity to the observations.

It is important to note that Tables 7 through 11 include data only for the major categories of candidates where the numbers each year are large enough to justify review of their means and standard deviations. The complete list of categories appears in Table 2, from which it can be seen that most categories had too few candidates to warrant their inclusion. Some consistent patterns do, however, emerge over the years, and other former patterns may disappear.

Age: In the past, candidates who were under the age of 20 typically achieved the lowest mean scores in all sections, except Section 4, Quantitative Methods, a phenomenon that was readily understood since younger candidates were closer to schooling where they had learned the essentials of Quantitative Methods. In 1981, this pattern no longer materialized. Those under the age of 20 had the highest mean in Section 1, and the lowest mean in the other four sections. Candidates between the ages of 26 and 35 had the highest means in Sections 2, 3, 4, and 5; those between the ages of 21 and 25 had the lowest mean in Section 1.

Education: Again, in education, the former pattern did not materialize, in which candidates holding master's or doctorates attained the highest mean scores, and high school graduates the lowest. In 1981, those with doctorates were highest in Section 1, 2, and 4; those whose highest level of education was "some high school" were highest in Sections 3 and 5. High school graduates were lowest in Sections 2, 3, 4, and 5, joined by those who had completed "some college" for lowest in Section 5. Those with "other" patterns of education were lowest in Section 1.

Academic Major: Accounting majors were lowest in Section 1, 2, and 5; Education majors, in Section 4; Data Processing majors in Section 3. Mathematics majors were highest in Section 2, and Engineering majors were highest in all other sections.

Position: Consistent with earlier reports, candidates in positions as EDP operators attained the lowest mean scores in all five sections. Operations researchers were highest in Sections 4 and 5, and each of the other three sections had a different position in the highest rank: Section 1, engineers; Section 2, methods analysts; Section 3, marketing.

Job Level: Once again, candidates in senior management positions achieved the highest mean scores in Section 1, 3, and 5, while Staff were highest in Section 2. This time, however, those in "other" job levels were highest in Section 4, a situation that is difficult to understand and explain. Candidates in Line positions were lowest in all sections except Section 1, where those in "other" job levels were lowest.

Business: All patterns in 1981 were different from those observed in 1980 with respect to the categories of business from which candidates came. In 1980, lowest scores had been received by candidates from either insurance or retail/marketing settings; in 1981, a different business was lowest in each of the five sections. In 1980, highest scores had been attained by candidates from four different business settings; in 1981, candidates from research/engineering settings attained highest scores in three of the five sections. The other two sections were represented by candidates from financial settings (Section 3) and those from consulting/service settings (Section 4).

Type of Organization: In 1980, candidates from manufacturing organizations attained the highest mean scores in all five sections, and lowest mean

scores were those achieved by candidates from non-manufacturing or "other" organizations. In 1981, those from manufacturing organizations were highest in only three of the five sections, while those from non-manufacturing were highest in Section 1, and those from service organizations were highest in Section 4. Candidates who worked for "other" types of organizations were lowest in all five sections.

Years of Experience: In this category, too, former patterns did not materialize. It has already been noted that younger candidates tended to attain the highest scores in Quantitative Methods; previous reports have also noted that candidates with more than ten years of experience generally achieved lower scores in that area than those with fewer years of experience. In 1981, everything was different. In Section 1, Data Processing Equipment, the mean scores were higher for each higher number of years of experience. In Section 2, Programming and Software, the lowest scores were achieved by those with one year of experience or less; scores increased up to three years of experience, then declined somewhat at successive levels, but never returned to the level of the relatively inexperienced. Similarly in Section 3, Principles of Management, and Section 5, Systems Analysis, where the mean scores rose with successive years of experience up to the fourth year, then gradually declined, but not to the level of the beginners. In Section 4, Quantitative Methods, the mean scores rose until the fourth year, then dropped off again, reaching a nadir lower than that of the beginners.

The interested reader may wish to compare Tables 7 through 11 of this report with comparable tables from prior years, to note the similarities and differences. It actually appears that there are many more changes in the 1981 statistics, when they are compared with 1980, than have occurred in earlier years.

DANTES Candidates

The 27 DANTES candidates tested in 1981 represent the lowest volume of candidates from this source in four years. In 1978 and 1979, there were 30 candidates, and in 1980, 47. Of the 27 candidates tested, 19 were repeating some or all sections; seven were first-time candidates taking all five sections; the other one was a first-time candidate taking fewer than five sections (see Table 13).

Twenty of the 27 candidates were taking Section 3, and 11 of them passed it. The highest pass rate was on Section 2, where 73% of the 15 candidates passed. The lowest pass rate was on Section 4, where 47% of the 15 candidates passed.

The DANTES candidates attained higher mean scores than the total group of candidates in Sections 1 and 4, and lower mean scores in the other three sections (see Table 5 for regular candidates, Table 12 for DANTES candidates). DANTES candidates attained higher pass rates than regular candidates in Sections 1, 2, and 4, but in 1980, DANTES candidates had higher pass rates in all five sections (see Tables 4 and 12).

Table 13 summarizes the education and experience backgrounds of the DANTES candidates. All but one held bachelor's or master's degrees, and only one had less than three years of experience.

Of the 27 DANTES candidates, 12 satisfied all requirements for the CDP.

Reliability

The reliability coefficients for the five sections of the CDP Examination shown in Table 14 are derived by the use of the Kuder-Richardson formula 20, which evaluates the internal consistency of a test. The 1981 coefficients ranged from .79, for Section 3, Principles of Management, to .86 for Sections 1, Data Processing Equipment, and 2, Programming and Software. Minor variations in the reliabilities from year to year and from section to section are to be expected, so long as the coefficients remain at an acceptable level for an examination of this sort. These coefficients are entirely satisfactory, especially in view of the relative brevity of the five sections, since shorter tests tend to have lower reliability coefficients than longer ones. The level of these coefficients permits the inference to be made that candidates would be likely to remain in similar positions relative to each other if they were to be tested on the same or an equivalent test.

Validity

The report of the 1980 CDP Examination provided four pages of discussion on the subject of the validity of the examination and issues related to examination validity. Readers are referred to that report for details on this issue. For

the present, suffice it to note that "validity refers to the appropriateness of inferences from test scores . . ." and that "evidence of content validity is required when the test user wishes to estimate how an individual performs in the universe of situations the test is intended to represent. Content validity is most commonly evaluated for tests of skill or knowledge." Those quotations are drawn from the test standards of the American Psychological Association.

The methods of content validity are those employed in the development and administration of the CDP Examination. The test specifications were initially based on a thorough analysis of the knowledges and skills required of the competent computer professional. Those specifications have been reviewed regularly by the CDP Council, and have been modified as needed to keep pace with the current state of computer technology. Through the weights assigned to the component parts of the specifications, the Council has indicated the relative importance and frequency of occurrence of the different components.

The test items were developed by competent members of the profession in relation to the topics in the content outline. After they were edited, the items were reviewed by panels of qualified professionals, including representatives of the CDP Council working with computer specialists drawn from different geographical and employment settings. In these reviews, the panels determined that the content of each question was appropriate, that the questions were clear, that they were correctly keyed, that only one answer was correct, and that each question was properly coded in relation to the approved outline of content. Later, drafts of final forms of the five sections were reviewed by the CDP Council to assure that the Examination represented a balanced sampling of the content of the outline, that new developments in the field of computer sciences had not caused any questions to become outdated or ambiguous, and to give approval to the assembled Examination before it was administered. Finally, the Council established the passing score in terms of the number of questions to be answered correctly on each section of the Examination, based on their review of the content and their expectations for the competent professional. That process also contributes to the content validity of the Examination. While some errors in the pass/fail decision are inevitable, establishment of the passing score in terms of evaluation of the content level judged to represent competence in the important knowledges, skills, and abilities is one way to hold such errors to a minimum. Then, in applying the established passing scores with complete objectivity

and anonymity, another component of validity is added. It is well known that subjective ratings result in biased and invalid evaluations, whereas objectivity and anonymity obviate those sources of invalidity.

Through these various procedures, the Institute for the Certification of Computer Professionals can be confident that the CDP Examination is a valid measure of the content considered to be essential knowledge before a candidate may use the letters CDP with his or her name.

Item Discrimination

Table 15 presents the item discrimination indices for the five sections of the 1981 CDP Examination. The discrimination index of a test item conveys the effectiveness with which the item distinguishes between candidates who score high and those who score low on the section in which the item appears. The higher the index, the more effectively the item distinguishes between the high- and low-scoring candidates.

The figures in the "Total" column at the right of Table 15, and those on the bottom line following "Average Index", convey the major information of interest to readers of this report. There were four more items in the examination with indices below .21 than in 1980, but there were eleven more items with indices above .41 than in 1980. Section I, Data Processing Equipment, and Section 2, Programming and Software, produced the highest average index. As in 1979 and 1980, Section 3, Principles of Management, had the lowest average index (.28), but it was higher than in 1979 when it was .26, and 1980 when it was .27.

Item Statistics

Statistics alone do not determine whether examination questions are good or bad. There are many factors that must be considered in the evaluation of test questions' adequacy. Among them are the item content, the distractors, item difficulty, general relevance, current importance, novelty of content, and discrimination indices, among others. If an item is testing important content, it may be easy or difficult and its discrimination index may be high or low. The content itself should determine the desirability of including the question. If the item is not testing worthwhile content, the best statistics for difficulty and discrimination will not make it a worthwhile item. At the same time it should

be noted that items with extremely low difficulty or discrimination indices may contain problems. The indices can suggest the need for an item to be reviewed and perhaps revised, but if the review shows nothing to be wrong with the item in the judgment of competent professionals, the statistics alone should not cause an item to be discarded.

Conclusion

The data from successive years of the CDP Examination program are generally consistent. Minor fluctuations are to be expected in terms of such statistics as mean scores, pass/fail rates, average item difficulty and discrimination indices, candidate characteristics, and the like, and yet the fluctuations are so slight that this annual report varies little from year to year.

The basic conclusion remains, as before: "In all respects, the CDP Examination program continues to justify the high opinion with which it is regarded in the profession." All of the data in this report, as in the reports of prior years, support that conclusion.

Table 1. List of Test Centers with Numbers of Candidates Tested and Sections Taken at Each, 1981 CDP Examination

Center	Number of Candidates Taking Each Section					No. Taking All 5	Total No. of Candidates Tested
	1	2	3	4	5		
Washington, DC	36	24	59	50	17	72	167
Evanston, IL (Special)	49	41	48	41	30	42	135
Chicago, IL	23	19	41	26	14	68	131
Normal, IL	20	11	27	24	11	71	117
Philadelphia, PA	13	9	37	30	6	52	106
New York, NY	17	19	24	21	12	56	98
South Orange, NJ	20	13	31	36	6	46	97
West Hartford, CT	13	10	20	22	7	57	95
Detroit, MI	16	13	21	18	5	57	90
Houston, TX	18	13	23	19	6	47	89
Seattle, WA	12	11	20	11	7	53	87
Cleveland, OH	9	10	26	17	3	45	81
Nashville, TN	11	14	16	12	3	42	71
Los Angeles, CA	8	8	15	20	3	39	69
Baltimore, MD	15	13	17	18	8	33	67
Berkeley, CA	12	13	11	17	5	32	65
Boston, MA	9	9	15	17	6	36	64
Dallas, TX	10	8	12	12	3	41	64
Minneapolis, MN	5	10	16	12	2	33	59
Pittsburgh, PA	9	9	17	10	4	26	55
Omaha, NB	9	7	13	1[illegible]	2	30	54
Austin, TX	6	5	12	7	3	37	53
Portland, OR	2	5	15	6	0	33	52
Tampa, FL	5	6	19	12	2	26	52
Atlanta, GA	10	7	18	16	3	20	50
Vancouver, BC	8	6	16	12	4	26	48
Columbia, SC	14	13	18	15	5	15	47
St. Louis, MO	9	4	10	11	4	26	44
Lincroft, NJ (Special)	16	5	26	23	5	13	44
San Diego, CA	6	5	16	12	2	23	42
Milwaukee, WI	12	8	5	6	6	19	38
Carson, CA	4	4	10	11	1	20	38
Columbus, OH	7	3	12	11	3	18	36
Clinton, MS	4	6	12	6	2	21	35
Wausau, WI	15	7	23	13	1	9	35
Memphis, TN	5	4	10	9	4	16	33
Winnipeg, MB	4	4	3	2	1	26	33
Richmond, VA	5	3	9	4	5	20	32
Houston, TX (Special)	2	1	6	5	1	25	32

Table 1. List of Test Centers with Numbers of Candidates Tested and Sections Taken at Each, 1981 CDP Examination (Cont'd)

Center	Number of Candidates Taking Each Section					No. Taking All 5	Total No. of Candidates Tested
	1	2	3	4	5		
Charlotte, NC	10	8	12	6	5	13	32
Denver, CO	5	4	7	6	0	15	31
Tempe, AZ	4	3	6	5	1	22	31
Louisville, KY	4	2	4	4	0	23	30
Stamford, CT (Special)	2	2	3	0	2	27	30
Notre Dame, IN	8	2	9	4	1	17	29
Indianapolis, IN	6	4	8	7	5	15	29
Toronto, ON	5	5	13	7	1	12	28
Miami, FL	2	3	7	10	1	13	25
New Orleans, LA	4	6	12	7	2	9	25
Madison, WI	4	1	10	4	0	13	24
Spokane, WA	3	3	8	6	4	6	22
Washington, DC (Pentagon-Special)	1	1	5	0	1	16	21
Jacksonville, FL	4	1	6	4	2	11	21
Carlisle, PA	5	2	11	8	1	8	21
Kansas City, MO	2	3	5	4	2	12	20
Raleigh, NC	4	6	7	4	3	7	19
Sacramento, CA	1	3	5	4	1	9	17
Rochester, NY	6	2	4	1	2	9	17
Albuquerque, NM	2	1	6	6	1	5	16
Little Rock, AR	2	2	4	3	2	10	16
San Antonio, TX	4	3	6	4	2	5	16
Waco, TX (Special)	0	0	0	0	0	15	15
Eau Claire, WI	1	0	5	4	1	10	15
Chattanooga, TN	2	0	4	3	0	10	15
Wilkes-Barre, PA	2	2	3	1	1	8	15
Springfield, IL	2	3	3	3	2	9	15
Shreveport, LA	3	4	6	2	3	6	14
Tulsa, OK	2	0	4	3	0	7	14
Des Moines, IA	3	2	7	7	2	4	14
Odessa, TX (Special)	3	2	6	3	1	7	13
Birmingham, AL	3	2	4	5	2	3	13
Cincinnati, OH	2	1	4	4	0	7	13
Buffalo, NY	0	1	1	1	0	11	13
Mexico City, Mexico (Foreign)	3	5	3	4	7	0	12
Syracuse, NY	3	2	2	1	2	6	10
Kent, OH	2	2	3	1	1	6	10
Dayton, OH	1	2	1	1	0	6	10
Calgary, AB	2	1	1	1	0	7	10

Table 1. List of Test Centers with Numbers of Candidates Tested and Sections Taken at Each, 1981 CDP Examination (Cont'd)

Center	Number of Candidates Taking Each Section					No. Taking All 5	Total No. of Candidates Tested
	1	2	3	4	5		
Las Vegas, NV	0	0	0	0	0	9	9
Salt Lake City, UT	1	1	3	1	2	5	9
Honolulu, HI	1	1	4	1	1	4	9
Rio Piedras, PR	2	1	4	2	0	3	9
El Paso, TX (Special)	0	2	1	1	0	6	8
New York, NY (Sunday)	0	0	2	1	0	5	8
Norfolk, VA	1	1	2	3	0	4	8
Montreal, PQ	3	1	1	2	1	2	8
Carlisle, PA (DANTES)	0	2	5	2	0	3	8
Kalamazoo, MI	3	3	3	3	0	2	8
Oklahoma City, OK	2	0	3	3	0	4	8
Knoxville, TN	2	1	2	2	1	4	8
Sierra Vista, AZ (Special)	0	2	2	2	1	4	7
Flint, MI	0	1	1	3	0	4	7
Albany, NY	1	2	2	3	2	3	7
Wanchai, Hong Kong (Foreign)	3	2	2	1	2	4	7
Huntington, WV	1	1	2	1	0	4	6
Washington, DC (DANTES)	2	1	4	4	2	0	6
Ottawa, ON (Special)	0	1	4	3	2	1	5
Anchorage, AK	1	0	0	0	0	4	5
Davenport, IA	1	1	1	2	1	2	5
Huntsville, AL	1	1	2	2	2	2	5
Portland, ME	0	1	0	0	1	4	5
Edmonton, AB	2	1	3	3	2	2	5
Halifax, NS	0	1	1	1	1	4	5
Lubbock, TX	1	0	3	0	1	1	4
Amarillo, TX	1	0	0	1	0	2	4
Warwick, RI	0	0	1	0	0	3	4
Abilene, TX (Special)	0	2	2	3	1	1	4
Mobile, AL	1	0	2	3	0	0	3
Loma Linda, CA (Sunday)	0	0	0	1	1	1	3
Takoma Park, MD (Sunday)	0	0	0	0	0	3	3
Fort Hauchuca, AZ (DANTES)	1	1	1	0	1	2	3
Casper, WY (Special)	1	0	2	3	0	0	3
Montgomery, AL	0	0	1	2	0	1	3
Boise, ID	1	0	0	1	0	2	3
Rep. of Singapore (Foreign)	0	0	0	0	0	3	3
Millersville, PA (Sunday)	0	0	0	1	0	1	2
Collegedale, TN (Sunday)	0	0	0	0	0	2	2

Table 1. List of Test Centers with Numbers of Candidates Tested and Sections Taken at Each, 1981 CDP Examination (Cont'd)

Center	Number of Candidates Taking Each Section					No. Taking All 5	Total No. of Candidates Tested
	1	2	3	4	5		
Wichita, KS	1	2	2	1	1	0	2
Fairbanks, AK (Special)	0	1	1	1	0	1	2
Scott AFB, IL (DANTES)	1	1	0	0	1	0	2
London, England (Foreign)	1	1	1	0	1	0	2
Evanston, IL (Sunday)	0	0	0	0	0	1	1
Gunther AFB, AL (DANTES)	0	0	0	0	0	1	1
Berrien Springs, MI (Sunday)	0	0	0	0	0	1	1
Detroit, MI (Sunday)	0	0	0	0	0	1	1
College Place, WA (Sunday)	0	0	1	1	1	0	1
Peterson AFB, CO (DANTES)	0	1	1	0	0	0	1
Fort Ord, CA (DANTES)	0	0	0	0	0	1	1
Anchorage, AK (DANTES)	0	0	1	0	0	0	1
Fredericton, NB (Special)	0	0	0	0	0	1	1
Wilmington, NC (Special)	0	1	1	1	0	0	1
Fort Shafter, HI (DANTES)	1	0	0	0	0	0	1
Juneau, AK (Special)	0	0	0	0	0	1	1
St. John's, NF	0	0	0	0	0	1	1
Fort Bragg, NC (DANTES)	0	0	0	0	0	1	1
Elgin AFB, FL (DANTES)	0	0	0	1	0	0	1
London, England (DANTES-Foreign)	0	1	0	0	0	0	1
Whitehorse, YT (Special)	0	0	0	0	0	1	1
North Bay, ON (Special)	0	0	1	1	0	0	1
Portland, OR (Sunday)	0	0	0	0	0	1	1
Khaldian, Kuwait (Foreign)	0	0	0	0	0	1	1
Atlanta, GA (Sunday)	0	0	1	1	0	0	1
Kwajalein, Marshall Isls (Foreign)	1	1	1	1	0	0	1
Bismarck, ND (Special)	0	0	0	0	0	1	1
Heidelberg, W. Germany (Foreign)	0	0	0	1	0	0	1
Angwin, CA (Sunday)	0	0	0	0	0	1	1
Christchurch, New Zealand (Foreign)	0	0	0	0	0	1	1
Lusaka, Zambia (Foreign)	0	0	0	0	0	1	1
Devonshire, Bermuda (Foreign)	0	0	1	0	0	0	1
TOTALS - CENTERS 149	628	516	1042	843	302	1900	3601

Table 2. Number and Percent of Candidates Taking Each Section of the 1981 CDP Examination in Relation to Demographic Factors

CATEGORY	Section 1		Section 2		Section 3		Section 4		Section 5	
	No.	%	No.	%	No.	%	No.	%	No.	%
Age										
20 years and under	4	*	3	*	4	*	4	*	3	*
21 - 25 years	346	14	337	14	366	12	322	12	315	14
26 - 35 years	1512	60	1421	59	1775	60	1626	59	1298	59
36 years and over	645	26	636	26	778	26	772	28	567	26
Educational Level										
Some High School	2	*	2	*	2	*	2	*	2	*
High School Graduate	63	2	58	2	75	3	75	3	61	3
Some College	403	16	394	16	486	17	498	18	355	16
Jr. College Graduate	171	7	163	7	221	8	220	8	155	7
Bachelor's Degree	1230	49	1150	48	1443	49	1311	48	1067	48
Master's Degree	568	22	560	23	602	20	540	20	477	22
Doctoral Degree	30	1	32	1	40	1	32	1	30	1
Other Education	43	2	39	2	51	2	44	2	36	2
Degree Major										
Data Processing	628	25	594	25	765	26	697	25	563	26
Accounting	200	8	191	8	180	6	178	6	157	7
Business	513	20	484	20	533	18	522	19	423	19
Education	41	2	40	2	49	2	43	2	41	2
Engineering	117	5	129	5	156	5	129	5	111	5
Liberal Arts	119	5	112	5	129	4	126	5	93	4
Mathematics	285	11	267	11	391	13	325	12	254	12
Sciences	119	5	117	5	154	5	139	5	110	5
Statistics	17	1	17	1	18	1	16	1	15	1
Other Major	113	4	102	4	120	4	115	4	92	4
Job Level										
Senior Management	128	5	125	5	140	5	149	5	112	5
Middle Management	882	35	873	36	1048	36	1003	37	767	35
Staff	1225	48	1124	47	1433	49	1285	47	1064	48
Line	43	2	47	2	56	2	51	2	49	2
Other	130	5	126	5	137	5	131	5	100	5
Type of Organization										
Service	1670	66	1588	66	1952	66	1794	65	1444	66
Nonmanufacturing	172	7	184	8	222	8	208	8	161	7
Manufacturing	390	15	368	15	438	15	422	15	333	15
Other Business	189	7	167	7	213	7	206	8	164	7

* = < 0.5%

Table 2. Continued

CATEGORY	Section 1 No.	Section 1 %	Section 2 No.	Section 2 %	Section 3 No.	Section 3 %	Section 4 No.	Section 4 %	Section 5 No.	Section 5 %
Position										
President/Owner	82	3	77	3	83	3	88	3	68	3
Vice President	30	1	30	1	38	1	44	2	28	1
Treasurer/Controller	9	*	11	*	11	*	10	*	9	*
Research	7	*	7	*	8	*	7	*	7	*
Manager Operations	55	2	62	3	64	2	62	2	49	2
Manager Data Process.	242	10	242	10	289	10	290	11	205	9
Systems Manager	86	3	84	3	115	4	116	4	74	3
Manager Programming	145	6	139	6	191	6	174	6	129	6
Education Administra.	13	1	12	*	15	1	15	1	13	1
Educator/Teacher	66	3	65	3	81	3	64	2	61	3
Consultant	262	10	254	11	274	9	265	10	218	10
Applications Engineer	8	*	10	*	12	*	10	*	13	1
Sales Representative	5	*	5	*	7	*	7	*	5	*
Systems Analyst	543	21	478	20	655	22	593	22	452	21
Methods Analyst	5	*	4	*	5	*	4	*	4	*
Operations Research	6	*	5	*	6	*	5	*	4	*
Accounting	20	1	23	1	19	1	18	1	16	1
Business Programming	533	21	496	21	584	20	520	19	472	21
Scientific Programming	31	1	34	1	38	1	33	1	28	1
Systems Programming	87	3	84	3	126	4	112	4	88	4
Engineering	14	1	17	1	19	1	20	1	18	1
Marketing	6	*	6	*	12	*	8	*	7	*
EDP Operating	23	1	24	1	25	1	23	1	24	1
Other Position	130	5	126	5	137	5	131	5	100	5
Business										
Insurance	420	17	384	16	466	16	429	16	351	16
EDP Services	206	8	183	8	260	9	233	8	179	8
Education	132	5	126	5	158	5	132	5	122	6
Government	239	9	234	10	306	10	274	10	219	10
Public Utilities	118	5	114	5	141	5	136	5	104	5
Mining/Construction	17	1	17	1	23	1	15	1	8	*
Transportation	33	1	31	1	39	1	38	1	29	1
Consulting/Services	388	15	383	16	414	14	396	14	332	15
Financial	117	5	116	5	145	5	141	5	100	5
Retail/Marketing	42	2	45	2	52	2	59	2	39	2
Distribution	20	1	26	1	30	1	27	1	23	1
Research/Engineering	32	1	32	1	44	1	38	1	31	1
Other Nonmanufacturing	78	3	81	3	96	3	84	3	68	3
Equipment	72	3	78	3	93	3	89	3	65	3
Instruments/Electric	21	1	23	1	30	1	22	1	20	1
Chemicals	58	2	50	2	53	2	55	2	50	2
Printing/Publishing	23	1	20	1	24	1	26	1	19	1
Food/Tobacco	39	2	33	1	44	1	42	2	31	1
Primary/Fabric Metal	55	2	52	2	59	2	57	2	47	2
Transport Equipment	16	1	14	1	17	1	14	1	13	1
Petroleum/Rubber	77	3	74	3	90	3	84	3	65	3
Paper/Paper Products	17	1	13	1	18	1	19	1	14	1
Textile/Apparel	12	*	11	*	10	*	14	1	9	*
Other Manufacturing	189	7	167	7	213	7	206	8	164	7

Table 2. Continued

CATEGORY	Section 1 No.	Section 1 %	Section 2 No.	Section 2 %	Section 3 No.	Section 3 %	Section 4 No.	Section 4 %	Section 5 No.	Section 5 %
Years of Experience										
1 year or less	93	4	96	4	89	3	91	3	90	4
2 years	132	5	130	5	143	5	126	5	119	5
3 years	177	7	169	7	188	6	169	6	161	7
4 years	212	8	207	9	230	8	193	7	187	8
5-10 years	1240	49	1169	48	1463	50	1344	49	1057	48
11 years or over	643	25	615	25	798	27	792	29	559	25
Taking Educational Equivalency										
12 months	8	*	8	*	11	*	9	*	7	*
18 months	52	2	52	2	57	2	41	1	43	2
24 months	45	2	41	2	59	2	47	2	42	2
Professional Affiliation										
None	1555	62	1459	60	1818	62	1688	62	1363	62
ACM	248	10	240	10	326	11	291	11	223	10
ACPA	18	1	19	1	23	1	22	1	17	1
ADI	-	-	-	-	-	-	-	-	-	-
AEDS	14	1	14	1	21	1	15	1	12	1
AICPA	74	3	76	3	52	2	51	2	56	3
AMA	57	2	58	2	55	2	65	2	45	2
AIA	19	1	20	1	23	1	20	1	16	1
ASM	107	4	98	4	118	4	112	4	83	4
CIPS	35	1	35	1	42	1	39	1	32	1
DPMA	549	22	527	22	639	22	613	22	471	21
IEEE	51	2	60	2	79	3	63	2	52	2
NAA	38	2	39	2	29	1	28	1	29	1
ORSA	16	1	19	1	17	1	15	1	18	1
SCDP	3	*	3	*	4	*	3	*	3	*
TIMS	15	1	18	1	17	1	13	*	17	1
State of Residence										
Alabama	12	*	10	*	15	1	17	1	11	*
Alaska	7	*	7	*	7	*	7	*	6	*
Arizona	34	1	34	1	38	1	36	1	31	1
Arkansas	14	1	13	1	16	1	15	1	14	1
California	156	6	157	6	181	6	189	7	137	6
Colorado	20	1	20	1	23	1	21	1	15	1
Connecticut	93	4	92	4	102	3	101	4	87	4
Delaware	1	*	1	*	2	*	2	*	1	*
District of Columbia	13	1	11	*	10	*	13	*	11	*
Florida	55	2	54	2	77	3	72	3	50	2
Georgia	39	2	35	1	48	2	46	2	31	1
Hawaii	5	*	5	*	8	*	5	*	5	*
Idaho	3	*	2	*	2	*	3	*	2	*
Illinois	283	11	260	11	308	10	287	10	242	11
Indiana	53	2	47	2	56	2	47	2	45	2
Iowa	13	1	12	*	18	1	16	1	13	1
Kansas	4	*	4	*	7	*	6	*	5	*
Kentucky	25	1	24	1	28	1	29	1	23	1
Louisiana	23	1	26	1	34	1	26	1	22	1
Maine	3	*	4	*	3	*	3	*	4	*

Table 2. Continued

CATEGORY	Section 1		Section 2		Section 3		Section 4		Section 5	
	No.	%	No.	%	No.	%	No.	%	No.	%
Maryland	105	4	96	4	120	4	107	4	91	4
Massachusetts	48	2	49	2	55	2	57	2	45	2
Michigan	87	3	84	3	94	3	91	3	73	3
Minnesota	39	2	43	2	48	2	46	2	36	2
Mississippi	27	1	29	1	35	1	29	1	25	1
Missouri	40	2	37	2	42	1	40	1	36	2
Montana	-	-	-	-	-	-	-	-	-	-
Nebraska	35	1	33	1	38	1	37	1	27	1
Nevada	11	*	12	*	12	*	12	*	11	*
New Hampshire	3	*	3	*	2	*	2	*	2	*
New Jersey	110	4	94	4	135	5	134	5	86	4
New Mexico	9	*	8	*	13	*	13	*	8	*
New York	112	4	111	5	117	4	113	4	102	5
North Carolina	32	1	31	1	35	1	30	1	25	1
North Dakota	1	*	1	*	1	*	1	*	1	*
Ohio	101	4	99	4	122	4	110	4	87	4
Oklahoma	14	1	11	*	18	1	16	1	10	*
Oregon	30	1	32	1	41	1	34	1	28	1
Pennsylvania	119	5	110	5	158	5	140	5	100	5
Puerto Rico	5	*	4	*	7	*	5	*	3	*
Rhode Island	2	*	2	*	2	*	2	*	2	*
South Carolina	30	1	31	1	37	1	30	1	21	1
South Dakota	-	-	-	-	-	-	-	-	-	-
Tennessee	88	3	89	4	100	3	94	3	78	4
Texas	229	9	218	9	255	9	238	9	200	9
Utah	5	*	5	*	7	*	5	*	6	*
Vermont	-	-	-	-	-	-	-	-	-	-
Virginia	95	4	88	4	120	4	111	4	85	4
Washington	82	3	82	3	100	3	86	3	79	4
West Virginia	4	*	5	*	6	*	5	*	4	*
Wisconsin	81	3	67	3	90	3	76	3	58	3
Wyoming	2	*	1	*	3	*	4	*	1	*
Canada										
Alberta	13	1	11	*	13	*	13	*	11	*
British Columbia	34	1	32	1	42	1	38	1	30	1
Manitoba	30	1	30	1	29	1	27	1	27	1
New Brunswick	1	*	1	*	1	*	1	*	1	*
Newfoundland	1	*	1	*	1	*	1	*	1	*
Nova Scotia	4	*	5	*	5	*	5	*	5	*
Ontario	17	1	18	1	30	1	26	1	15	1
Quebec	6	*	4	*	4	*	3	*	4	*
Saskatchewan	-	-	-	-	-	-	1	*	-	-
Yukon Territory	1	*	1	*	1	*	1	*	1	*
Foreign	18	1	19	1	19	1	17	1	21	1
Total	2,528	100	2,416	100	2,942	100	2,743	100	2,202	100

Table 3. Number and Percent of Candidates Taking the CDP Examination and Taking Each Section in 1981

	Examination	Sect. 1	Sect. 2	Sect. 3	Sect. 4	Sect. 5
First-Time - All						
Number	1,781	1,781	1,781	1,781	1,781	1,781
Percent	49	70	74	61	65	81
First-Time - Some						
Number	157	139	138	133	115	103
Percent	4	6	6	5	4	5
Repeaters						
Number	1,663	608	497	1,028	847	318
Percent	46	24	21	35	31	14
Total						
Number	3,601	2,528	2,416	2,942	2,743	2,202
Percent*	100	100	100	100	100	100

*Percents added vertically may total more or less than 100 as a result of rounding decimal values.

Table 4. Number and Percent of Candidates Taking, Passing, and Failing Each Section and All Sections of the 1981 CDP Examination

	First - All		First - Some		Repeaters		Total	
	No.	%	No.	%	No.	%	No.	%
Section 1 - Data Processing Equipment								
Taking	1781	100	139	100	608	100	2528	100
Passed	1016	57	51	37	250	41	1317	52
Failed	765	43	88	63	358	59	1211	48
Section 2 - Programming and Software								
Taking	1781	100	138	100	497	100	2416	100
Passed	1228	69	77	56	212	43	1517	63
Failed	553	31	61	44	285	57	899	37
Section 3 - Principles of Management								
Taking	1781	100	133	100	1028	100	2942	100
Passed	1184	66	63	47	643	63	1890	64
Failed	597	34	70	53	385	37	1052	36
Section 4 - Quantitative Methods								
Taking	1781	100	115	100	847	100	2743	100
Passed	881	49	49	43	254	30	1184	43
Failed	900	51	66	57	593	70	1559	57
Section 5 - Systems Analysis and Design								
Taking	1781	100	103	100	318	100	2202	100
Passed	1479	83	70	68	232	73	1781	81
Failed	302	17	33	32	86	27	421	19
All Sections								
Taking	1781	100	-	-	119	100	1900	100
Passed All Five	608	34	-	-	11	9	619	33
Failed One or More	1173	66	-	-	108	91	1281	67

Table 5. Basic Statistics for 1981 CDP Examination

	Section 1 Data Processing Equipment	Section 2 Programming & Software	Section 3 Principles of Mgmt.	Section 4 Quantitative Methods	Section 5 Systems Analysis & Design
Highest Score	60	59	60	58	60
Lowest Score	2	14	14	4	4
Maximum Possible	60	60	60	60	60
Median Score	42	44	44	40	48
Mean Score	41.7	43.6	43.3	39.7	46.7
Standard Deviation	7.9	8.1	6.3	7.8	6.8
No. of Candidates	2,528	2,416	2,942	2,743	2,202

Table 6. Number of Items at Each Difficulty Level in 1981 CDP Examination

Difficulty Index	Sec. 1 D. P. Equip.	Sec. 2 Progr. & Software	Sec. 3 Prin. of Mgmt.	Sec. 4 Quant. Methods	Sec. 5 Sys. Anal. & Design	Total
91-100	4	11	10	3	14	42
81-90	16	13	15	11	16	71
71-80	17	14	12	14	16	73
61-70	7	10	9	17	9	52
51-60	8	6	7	4	4	29
41-50	5	6	6	7	1	25
31-40	3	-	-	3	-	6
21-30	-	-	1	1	-	2
Av. Diff.	.71	.74	.73	.67	.79	.73

Table 7. Comparison of Performance of Selected Groups on Section 1, Data Processing Equipment, 1981 CDP Examination

	First - All			First - Some			Repeaters			Total		
	No.	Mean	S.D.	No.	Mean	S.D.	No.	Mean	S.D.	No.	Mean	S.D.
Age - 21-25	265	39.6	8.4	22	39.1	8.0	59	39.6	5.3	346	39.6	7.9
26-35	1057	42.9	8.3	85	40.0	8.3	370	39.9	5.8	1512	42.0	7.9
36+	439	43.4	8.1	29	37.6	8.9	177	40.1	5.6	645	42.2	7.7
Educ.-Some Coll.	281	40.6	9.0	26	36.8	7.2	96	39.6	5.4	403	40.1	8.2
Bachelor's	875	42.4	8.4	54	39.1	8.5	301	39.9	5.7	1230	41.7	7.9
Master's	400	44.7	7.4	31	43.3	8.1	137	40.4	6.2	568	43.6	7.4
Major-D.P.	455	42.1	8.4	34	39.4	8.8	139	39.9	5.4	628	41.5	7.9
Business	345	41.9	8.0	24	39.6	9.3	144	39.8	5.9	513	41.2	7.6
Math	211	44.1	8.1	16	41.8	7.3	58	40.7	5.2	285	43.3	7.7
Position -												
D.P. Mgr.	160	43.5	8.4	13	40.7	7.9	69	40.8	5.6	242	42.6	7.8
Consultant	192	44.0	7.8	7	*	*	63	41.1	5.4	262	43.2	7.3
Sys. Anal.	378	42.5	7.7	31	39.6	8.8	134	40.0	5.2	543	41.7	7.3
Bus. Prog.	379	39.7	8.0	50	39.1	7.5	104	38.3	6.4	533	39.4	7.7
Level-Middle	616	44.4	7.8	37	40.1	8.2	229	41.0	5.6	882	43.3	7.5
Staff	873	41.4	8.1	87	39.3	8.0	265	39.2	5.8	1225	40.8	7.7
Business -												
Insurance	263	40.2	8.1	51	38.2	7.7	106	38.3	5.9	420	39.5	7.6
EDP Serv.	133	42.5	8.9	11	42.2	6.7	62	39.8	5.4	206	41.7	8.0
Education	91	45.5	6.9	6	*	*	35	41.5	5.3	132	44.3	6.9
Govt.	173	42.6	8.7	10	39.4	7.8	56	39.8	6.0	239	41.8	8.2
Cons/Serv.	289	44.3	7.9	10	42.3	5.0	89	41.2	5.6	388	43.5	7.5
Financial	75	41.9	8.2	6	*	*	36	38.1	4.5	117	40.7	7.5
Type Org. -												
Service	1145	42.7	8.2	105	39.6	7.9	420	39.8	5.8	1670	41.8	7.8
Nonmfg.	131	43.9	8.3	8	*	*	33	42.2	5.9	172	43.2	8.3
Mfg.	291	43.1	8.4	15	42.2	7.5	84	40.4	4.9	390	42.5	7.8
Experience -												
4 yrs.	153	43.1	7.7	11	40.6	6.9	48	39.1	5.4	212	42.0	7.4
5-10 yrs.	853	43.0	8.5	65	40.8	8.9	322	40.0	5.9	1240	42.1	8.0
11+ yrs.	432	43.7	8.3	29	37.4	6.2	182	40.3	5.3	643	42.4	7.7
Affiliation -												
None	1097	41.4	8.4	93	38.9	8.7	365	39.4	5.7	1555	40.8	7.9
ACM	190	47.8	7.0	16	42.9	7.9	42	40.5	5.6	248	46.2	7.4
DPMA	367	43.5	7.9	31	39.0	8.2	151	40.5	5.7	549	42.4	7.6
Total	1781	42.5	8.3	139	39.3	8.5	608	40.0	5.7	2528	41.7	7.9

*Mean and S.D. are not reported where N < 10.

Table 8. Comparison of Performance of Selected Groups on Section 2, Programming and Software, 1981 CDP Examination

	First - All			First - Some			Repeaters			Total		
	No.	Mean	S.D.	No.	Mean	S.D.	No.	Mean	S.D.	No.	Mean	S.D.
Age - 21-25	265	42.8	8.4	24	41.4	7.9	48	41.8	5.1	337	42.5	8.0
26-35	1057	45.0	8.0	82	42.8	7.6	282	40.1	6.7	1421	43.9	8.0
36+	439	45.0	8.3	30	41.5	9.3	167	39.8	6.4	636	43.5	8.3
Educ.-Some Coll.	281	42.7	9.2	30	41.3	8.4	83	40.3	7.5	394	42.1	8.9
Bachelor's	875	45.0	8.1	59	42.6	7.4	216	40.5	6.4	1150	44.0	7.9
Master's	400	45.8	7.5	26	44.8	8.4	134	39.6	6.4	560	44.3	7.8
Major-D.P.	455	45.3	7.4	41	42.5	8.4	98	41.9	5.5	594	44.6	7.3
Business	345	43.4	8.3	18	44.2	5.3	121	39.6	6.7	484	42.5	8.0
Math	211	47.4	7.4	18	44.2	7.6	38	42.4	5.9	267	46.4	7.4
Position -												
D.P. Mgr.	160	42.7	9.3	12	43.7	6.4	70	38.7	6.3	242	41.6	8.6
Consultant	192	45.1	8.3	7	*	*	55	39.7	5.4	254	43.9	8.0
Sys. Anal.	378	45.7	7.1	26	42.6	7.9	74	42.0	5.5	478	45.0	7.1
Bus. Prog.	379	44.5	7.4	53	42.3	8.0	64	41.2	6.3	496	43.8	7.4
Level-Middle	616	45.2	8.4	38	42.9	7.1	219	40.0	6.4	873	43.8	8.2
Staff	823	45.0	7.5	86	42.6	7.9	165	41.2	6.2	1124	44.3	7.5
Business -												
Insurance	263	43.7	8.0	50	42.4	7.4	71	39.6	7.0	384	42.8	7.9
EDP Serv.	133	44.4	8.3	11	42.2	7.0	39	40.0	5.6	183	43.3	7.9
Education	91	46.7	7.4	4	*	*	31	40.2	6.8	126	45.0	8.0
Govt.	173	44.3	8.6	11	40.4	10.7	50	39.5	6.7	234	43.1	8.6
Cons/Serv.	289	45.9	7.9	15	44.6	5.1	79	40.2	5.8	383	44.7	7.7
Financial	75	44.5	8.4	4	*	*	37	40.3	5.9	116	43.1	7.9
Type Org. -												
Service	1145	44.9	8.1	104	42.5	7.9	339	40.0	6.4	1588	43.7	8.0
Nonmfg.	131	44.9	8.7	10	39.8	11.1	43	40.5	7.4	184	43.6	8.8
Mfg.	291	45.4	7.8	12	45.3	6.7	65	40.5	6.0	368	44.5	7.7
Experience -												
4 yrs.	153	45.0	7.8	13	43.2	4.9	41	41.5	6.3	207	44.2	7.5
5-10 yrs.	853	45.2	8.3	71	43.0	8.4	245	40.0	6.3	1169	44.0	8.2
11+ yrs.	432	45.3	8.4	20	41.2	9.4	163	39.7	6.5	615	43.7	8.4
Affiliation -												
None	1097	44.3	8.1	96	42.3	7.8	266	40.2	6.5	1459	43.4	8.0
ACM	190	48.9	6.3	16	45.7	8.3	34	40.1	7.4	240	47.4	7.3
DPMA	367	44.4	8.6	24	40.7	9.1	136	40.2	6.3	527	43.2	8.3
Total	1781	44.7	8.2	138	42.2	8.2	497	40.1	6.5	2416	43.6	8.1

*Mean and S.D. are not reported where N < 10.

Table 9. Comparison of Performance of Selected Groups on Section 3, Principles of Management, 1981 CDP Examination

	First - All			First - Some			Repeaters			Total		
	No.	Mean	S.D.	No.	Mean	S.D.	No.	Mean	S.D.	No.	Mean	S.D.
Age - 21-25	265	42.0	7.2	10	39.8	7.4	91	42.8	4.4	366	42.2	6.6
26-35	1057	44.2	6.6	83	40.8	7.2	635	42.7	5.1	1775	43.5	6.2
36+	439	44.1	6.6	40	40.1	6.6	299	42.7	5.0	778	43.4	6.1
Educ.-Some Coll.	281	40.7	7.1	20	38.9	6.1	185	42.1	5.0	486	41.2	6.4
Bachelor's	875	43.8	6.5	66	41.3	6.7	502	43.0	4.7	1443	43.4	6.0
Master's	400	47.2	5.3	25	42.7	6.3	177	43.5	5.5	602	46.0	5.7
Major-D.P.	455	42.7	6.9	36	41.7	6.5	274	42.1	5.1	765	42.4	6.3
Business	345	45.2	6.3	22	40.5	7.5	166	43.2	5.7	533	44.4	6.3
Math	211	44.0	6.5	9	*	*	171	43.3	4.3	391	43.6	5.6
Position -												
D.P. Mgr.	160	43.5	6.1	15	35.6	6.7	114	42.1	4.6	289	42.6	5.8
Consultant	192	46.5	6.3	7	*	*	75	44.0	4.7	274	45.7	6.0
Sys. Anal.	378	44.1	6.2	29	40.2	6.3	248	42.8	4.7	655	43.4	5.8
Bus. Prog.	379	41.4	6.5	30	40.3	6.3	175	42.0	5.3	584	41.6	6.2
Level-Middle	616	45.4	6.1	44	40.0	7.6	388	43.4	4.6	1048	44.5	5.9
Staff	873	42.7	6.7	67	40.9	6.2	493	42.4	4.9	1433	42.5	6.1
Business -												
Insurance	263	42.4	6.9	36	37.6	5.8	167	42.6	4.9	466	42.1	6.3
EDP Serv.	133	43.0	7.0	8	*	*	119	43.0	5.3	260	43.0	6.3
Education	91	45.0	5.9	5	*	*	62	43.6	4.1	158	44.3	5.3
Govt.	173	43.1	6.8	19	41.6	6.6	114	41.8	5.1	306	42.5	6.2
Cons/Serv.	289	46.1	6.7	11	43.8	4.0	114	43.5	5.0	414	45.3	6.3
Financial	75	44.3	6.2	7	*	*	63	42.5	4.0	145	43.3	5.6
Type Org. -												
Service	1145	44.0	6.8	91	40.4	6.4	716	42.8	4.9	1952	43.4	6.2
Nonmfg.	131	44.3	5.6	16	40.7	8.8	75	42.2	4.6	222	43.4	5.7
Mfg.	291	44.2	6.6	15	44.3	6.5	132	42.9	4.8	438	43.8	6.2
Experience -												
4 yrs.	153	44.6	6.0	9	*	*	68	42.9	4.3	230	44.0	5.6
5-10 yrs.	853	44.2	6.7	59	41.2	6.7	551	42.5	5.2	1463	43.5	6.3
11+ yrs.	432	44.1	6.8	46	39.4	7.4	320	42.9	4.9	798	43.3	6.2
Affiliation -												
None	1097	43.0	6.8	85	40.7	6.9	636	42.2	5.1	1818	42.6	6.3
ACM	190	46.4	6.1	17	42.1	5.7	119	44.0	4.7	326	45.3	5.8
DPMA	367	44.2	6.3	29	39.2	8.3	243	43.1	5.0	639	43.5	6.0
Total	1781	43.8	6.8	133	40.5	7.0	1028	42.7	5.0	2942	43.3	6.2

*Mean and S.D. are not reported where N < 10.

Table 10. Comparison of Performance of Selected Groups on Section 4, Quantitative Methods, 1981 CDP Examination

	First - All			First - Some			Repeaters			Total		
	No.	Mean	S.D.	No.	Mean	S.D.	No.	Mean	S.D.	No.	Mean	S.D.
Age - 21-25	265	40.0	8.1	10	39.8	6.3	47	39.0	5.5	322	39.8	7.7
26-35	1057	41.0	8.5	70	39.2	8.5	499	38.2	5.9	1626	40.1	7.9
36+	439	39.8	8.5	34	38.6	7.1	299	37.8	6.0	772	39.0	7.6
Educ.-Some Coll.	281	35.1	8.7	20	34.2	7.1	197	36.0	6.4	498	35.4	7.8
Bachelor's	875	41.1	7.7	55	39.6	6.9	381	39.2	5.5	1311	40.5	7.2
Master's	400	45.4	6.4	27	43.6	7.8	113	40.2	5.1	540	44.2	6.6
Major-D.P.	455	39.7	8.5	27	37.9	7.3	215	37.9	6.1	697	39.1	7.9
Business	345	41.9	8.3	17	41.5	7.2	160	38.4	5.7	522	40.8	7.7
Math	211	42.3	7.0	17	40.8	7.8	97	39.4	4.8	325	41.3	6.6
Position -												
D.P. Manager	160	39.2	9.0	16	38.1	7.5	114	37.0	6.1	290	38.3	8.0
Consultant	192	44.5	7.8	5	*	*	68	39.8	4.6	265	43.2	7.5
Sys. Anal.	378	40.6	7.8	22	39.2	6.7	193	38.3	5.6	593	39.8	7.2
Bus. Prog.	379	38.4	7.9	27	38.5	9.5	114	37.7	5.6	520	38.2	7.6
Level-Middle	616	41.8	8.5	40	38.1	7.9	347	38.2	5.7	1003	40.4	7.8
Staff	873	39.4	8.2	59	39.2	8.0	353	38.3	5.7	1285	39.1	7.6
Business -												
Insurance	263	38.2	8.2	25	38.0	8.2	141	38.0	6.3	429	38.2	7.6
EDP Serv.	133	40.3	8.5	7	*	*	93	38.1	5.9	233	39.4	7.5
Education	91	42.6	7.9	4	*	*	37	38.1	5.5	132	41.3	7.5
Govt.	173	39.4	8.7	13	40.7	6.8	88	38.1	5.8	274	39.1	7.8
Cons/Serv.	289	43.8	8.3	10	40.4	7.8	97	39.6	5.4	396	42.7	7.9
Financial	75	40.8	7.9	8	*	*	58	37.9	6.7	141	39.4	7.6
Type Org. -												
Service	1145	40.9	8.4	74	39.6	7.5	575	38.3	6.0	1794	40.0	7.8
Nonmfg.	131	40.8	8.4	14	41.7	6.8	63	37.5	5.0	208	39.9	7.6
Mfg.	291	40.3	8.2	20	37.8	9.0	111	38.5	5.7	422	39.7	7.7
Experience -												
4 yrs.	153	42.4	7.3	9	*	*	31	40.2	5.7	193	41.9	7.1
5-10 yrs.	853	40.9	8.5	50	38.3	9.1	441	38.3	5.8	1344	40.0	7.8
11+ yrs.	432	39.2	9.0	36	38.9	7.2	324	37.4	6.2	792	38.5	7.9
Affiliation -												
None	1097	39.7	8.4	77	38.7	8.4	514	37.8	6.0	1688	39.1	7.8
ACM	190	44.2	7.2	17	41.9	6.3	84	39.9	5.4	291	42.8	7.0
DPMA	367	40.3	8.4	18	37.6	6.6	228	38.1	6.0	613	39.4	7.7
Total	1781	40.5	8.4	115	39.0	7.9	847	38.1	5.9	2743	39.7	7.8

*Mean and S.D. are not reported where N < 10.

Table 11. Comparison of Performance of Selected Groups, on Section 5, Systems Analysis and Design, 1981 CDP Examination

	First - All			First - Some			Repeaters			Total		
	No.	Mean	S.D.	No.	Mean	S.D.	No.	Mean	S.D.	No.	Mean	S.D.
Age - 21-25	265	45.3	7.1	11	42.6	7.2	39	44.7	6.4	315	45.1	7.1
26-35	1057	47.9	6.5	64	43.8	6.4	177	43.8	6.0	1298	47.1	6.6
36+	439	47.4	6.4	27	45.0	6.7	101	43.5	7.9	567	46.6	6.9
Educ.-Some Coll.	281	45.0	7.8	20	44.1	6.2	54	42.4	7.4	355	44.6	7.7
Bachelor's	875	47.5	6.5	47	44.5	6.8	145	44.6	5.2	1067	47.0	6.5
Master's	400	49.5	5.4	13	44.8	6.2	64	43.3	8.8	477	48.5	6.4
Major-D.P.	455	46.9	6.6	26	45.2	5.0	82	43.9	6.9	563	46.4	6.7
Business	345	48.0	6.6	19	43.7	7.3	59	43.5	7.7	423	47.2	7.0
Math	211	48.3	6.5	13	43.9	6.6	30	44.9	4.4	254	47.7	6.4
Position -												
D.P. Mgr.	160	47.0	6.8	9	*	*	36	41.9	8.8	205	46.0	7.4
Consultant	192	49.4	5.6	6	*	*	20	46.1	5.2	218	49.1	5.7
Sys. Anal.	378	47.8	5.8	18	40.2	6.4	56	44.8	5.2	452	47.2	6.0
Bus. Prog.	379	45.7	6.8	35	45.1	5.3	58	43.9	4.8	472	45.4	6.5
Level-Middle	616	48.8	6.0	35	45.0	6.5	116	43.7	7.5	767	47.8	6.5
Staff	873	46.6	6.6	59	44.0	6.2	132	44.3	5.1	1064	46.2	6.5
Business -												
Insurance	263	45.9	6.9	35	43.3	6.3	53	43.1	5.1	351	45.2	6.7
EDP Serv.	133	46.8	7.1	7	*	*	39	43.8	5.5	179	45.9	7.0
Education	91	48.4	5.6	4	*	*	27	46.1	4.5	122	47.8	5.4
Govt.	173	46.9	7.2	11	47.4	4.0	35	42.2	8.3	219	46.2	7.5
Cons/Serv.	289	49.3	6.1	11	46.5	5.6	32	45.7	5.1	332	48.8	6.1
Financial	75	47.1	6.8	4	*	*	21	44.1	7.3	100	46.1	7.1
Type Org. -												
Service	1145	47.5	6.7	77	44.0	6.4	222	44.0	6.1	1444	46.8	6.7
Nonmfg.	131	47.9	6.1	8	*	*	22	45.3	5.1	161	47.4	6.1
Mfg.	291	47.8	6.3	7	*	*	35	45.2	5.8	333	47.5	6.2
Experience -												
4 yrs.	153	47.6	5.6	8	*	*	26	45.6	4.6	187	47.3	5.5
5-10 yrs.	853	47.8	6.7	46	44.1	6.7	158	43.2	6.7	1057	46.9	6.9
11+ yrs.	432	48.0	6.4	30	45.3	5.9	97	44.2	7.1	559	47.2	6.6
Affiliation -												
None	1097	46.8	6.7	72	44.3	6.5	194	43.1	6.6	1363	46.1	6.9
ACM	190	49.7	5.6	10	43.5	7.8	23	42.9	10.1	223	48.7	6.7
DPMA	367	47.4	6.8	21	43.2	6.0	83	44.9	5.8	471	46.8	6.7
Total	1781	47.4	6.6	103	44.0	6.6	318	43.8	6.7	2202	46.7	6.8

*Mean and S.D. are not reporter where N < 10.

Table 12. Number of DANTES Candidates, by Service Branch, Taking, Passing, and Failing Each Section of the 1981 CDP Examination, With Mean Scores of Total DANTES Group

	Section 1 Data Processing Equipment		Section 2 Programming & Software		Section 3 Principles of Mgmt.		Section 4 Quantitative Methods		Section 5 Systems Analysis & Design	
	No.	%	No.	%	No.	%	No.	%	No.	%
First-time, All										
Army										
Taking	6	100	6	100	6	100	6	100	6	100
Passed	3	50	3	50	3	50	2	33	2	33
Failed	3	50	3	50	3	50	4	67	4	67
Navy										
Taking	1	100	1	100	1	100	1	100	1	100
Passed	1	100	1	100	1	100	-	-	1	100
Failed	-	-	-	-	-	-	1	100	-	-
First-time, Some										
Army										
Taking	1	100	1	100	1	100	-	-	1	100
Passed	1	100	1	100	1	100	-	-	1	100
Failed	-	-	-	-	-	-	-	-	-	-
Air Force										
Taking	-	-	-	-	2	100	1	100	1	100
Passed	-	-	-	-	1	50	1	100	1	100
Failed	-	-	-	-	1	50	-	-	-	-
Repeaters										
Army										
Taking	2	100	3	100	8	100	3	100	1	100
Passed	1	50	2	67	4	50	2	67	-	-
Failed	1	50	1	33	4	50	1	33	1	100
Navy										
Taking	-	-	1	100	-	-	-	-	-	-
Passed	-	-	1	100	-	-	-	-	-	-
Failed	-	-	-	-	-	-	-	-	-	-
Air Force										
Taking	3	100	3	100	2	100	4	100	2	100
Passed	1	33	3	100	1	50	2	50	2	100
Failed	2	67	-	-	1	50	2	50	-	-
Total DANTES										
Taking	13	100	15	100	20	100	15	100	12	100
Passed	7	54	11	73	11	55	7	47	7	58
Failed	6	46	4	27	9	45	8	53	5	42
Mean Score	42.31		42.73		42.65		40.33		44.50	

Table 13. Education and Experience of DANTES Candidates Taking 1981 CDP Examination

	First Time All	First Time Some	Repeater	Total
Education Level				
Jr. College Grad.	-	1	-	1
Bachelor's Degree	1	-	5	6
Master's Degree	6	-	14	20
DANTES Experience				
2 years	-	-	1	1
3 years	2	-	1	3
5-10 years	3	1	11	15
11 years or Over	2	-	6	8
Total DANTES	7	1	19	27

Table 14. Reliability Coefficients for 1981 CDP Examination

	$K\text{-}R_{20}$
Section 1. Data Processing Equipment	.86
Section 2. Programming and Software	.86
Section 3. Principles of Management	.79
Section 4. Quantitative Methods	.85
Section 5. Systems Analysis and Design	.81

Table 15. Number of Items at Each Level of Discrimination in 1981 CDP Examination

Discrimination Index	Sec. 1 D. P. Equip.	Sec. 2 Progr. & Software	Sec. 3 Prin. of Mgmt.	Sec. 4 Quant. Methods	Sec. 5 Sys. Anal. & Design	Total
.51-.60	1	1	-	-	-	2
.41-.50	14	12	4	10	3	43
.31-.40	26	25	24	30	21	126
.21-.30	13	17	18	16	29	93
.11-.20	6	5	12	3	7	33
.01-.10	-	-	2	1	-	3
Average Index	.33	.33	.28	.32	.29	.31